REMARKS

Reconsideration of the above-referenced application is respectively requested in view of the above amendments and these remarks. Claims 1-41 are currently pending.

In the Office Action, claims 4, 5 and 18 are objected to as being dependent upon a rejected base claim but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants note with appreciation that the subject matter of these claims is deemed to be allowable if rewritten to include all limitations of the superseding and rejected claims. Applicants wish to reserve the right to prosecute these claims should further discussion prove unrewarding.

According to the Office Action, the amendment to the Figures has not been considered because Applicant has not furnished a replacement drawing under 37 C.F.R. § 1.81(c). To have amended Figures 3 and 4 properly considered, Applicants provide a replacement sheet for the Figures 3 and 4 pursuant to 37 C.F.R. § 1.121(d). Applicant therefore requests that the amended Figures be fully considered.

The amendment to Figures 3 and 4 also has not been considered because they allegedly contain new subject matter. Applicants respectfully traverse this objection. As stated in their response to the first Office Action, Applicants support for the amended drawings is found on page 9, lines 13-16, which states in part, "the second signal may include the first pilot based on a W16 Walsh code but the second pilot based on a *negative* W16 Walsh code" (emphasis added), and page 10, lines 11-13, which states in part "[t]hese signals are also combined, e.g., *subtracted*" (emphasis added.) Additional disclosure is found on page 13, line 5, which states "However, the second signal is *diverse* relative to the first signal (emphasis added)." Applicants have amended Figures 3 and 4 to indicate that the second combination circuit 340 and second combination circuit 440 provide the negative of the second data stream or subtract the second data stream from the first data stream as disclosed in the Specification. Applicant respectfully submits that the cited disclosures provide adequate basis for the amendment to Figures 3 and 4.

Claims 35-40 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. In particular, it is asserted that the

limitation "the second output being a difference of the first and second signals" was not described in the original specification. Applicant respectfully disagrees with this position, but has amended claim 35 to overcome the rejection. Applicant has deleted the term "difference" and replaced it with "subtraction." Adequate disclosure for this change in terms is found on page 10, lines 11-13 where the specific term "subtracted" is found. Additional disclosure is also found on page 9, lines 11-13 and page 13, line 5. Applicants respectfully submit that this amendment is consistent with the previously amendment made to claims 1, 12 and 23 that recite a first signal including a first pilot and an *inverted* second pilot. Inversion of a pilot denotes that the negative of the second pilot is provided. The mathematical operation of combining a first value with the negative of a second value is equivalent to subtracting the second value from the first value. Applicants also respectfully submit that the amendment to claim 35 does not necessitate an additional search because the "subtraction" conveys the same essential meaning as the claim language used in the other independent claims to which the previous searches have already be conducted. In view of the foregoing, Applicants respectfully submit that claims 35-40 comply with the written description requirement. Applicants therefore request that the rejection under Section 112, first paragraph, be withdrawn.

Claims 23-34 are rejected under 35 U.S.C. § 101 because they are directed to a computer program listing. Applicants have amended claim 23 to clarify that the computer program operates a processor that is a part of a base station within the communication system. Applicants' amendment does not necessitate an additional search as claims 12-22 are directed to a base station. Applicants respectfully traverse this rejection. Applicants note that numerous patents have issued to Motorola, Inc. as assignee that use the same or similar format as claims 23-34, i.e. claims directed to a "computer program comprising." See, e.g., United States Patent Nos. 6,775,541 B2. It is also well established that claims directed to computer programs are not non-statutory. MPEP § 2106 makes clear that computer-related claims can be patentable and that the mere fact that claims are directed to computer program or that they claim a computer program listing should not preclude patentability under Section 101. The MPEP directs the examination of claims related to computer related inventions according to given criteria.

Applicants respectfully submit that claims 23-34 meet the criteria set out by MPEP § 2106. "A claim limited to a machine or manufacture, which has a practical application in the technological arts, is statutory. In most cases, a claim to a specific machine or manufacture will have a practical application." Claims 23-34 are directed to a computer program that operates in conjunction with a base station's processor to control the base station to operate with transmit diversity. Accordingly, claims 23-34 are a part of a machine, e.g. a base station, performing a practical application, e.g. transmit diversity. In addition, the claimed computer program results in a transformation outside the processor. For example, the computer program generates signals, modulates signals, transmits phase-shifted modulated signals etc.

Claims 23-34 also fit within the safe harbors for computer related inventions. The claimed computer program "requires physical acts to be performed outside the computer independent of the steps to be performed by the computer program." As stated above, the claims provide that the computer program operate a processor to generate signals, modulate signals, transmit phase-shifted modulated signals etc. The claimed routines result in having a different physical attribute or structure. For example, the third routine phase-shift modulates the first signal and the fourth routine transmits that signal.

In view of the foregoing, Applicants respectfully submit that claims 23-34 include statutory subject matter. In particular, claims 23-34 are directed to a patentable computer program that has statutory product aspects and statutory process aspects. In addition, these claims include independent physical acts and are therefore a part of a "safe harbor." Applicants therefore request that the rejection under Section 101 be withdrawn.

Claims 1-3, 6-17, 19-27, 30-34 and 41 are rejected under 35 U.S.C. § 103(a) as being unpatentable over United States Patent No. 6,038,263 to Kotzin et al. in view of United States Patent Application Publication No. 2002/0003774 to Wang et al. Applicants have carefully reviewed the claims and the cited references and respectfully traverses the rejection. Claim 1 is directed to transmit diversity method including (a) generating a first signal based on a first data stream having a first pilot and a second data stream having a second pilot and first signal includes a first pilot and an inverted second pilot and (b) generating a second signal based on the first data stream having the first pilot and the second data stream having the second pilot such that the second signal is

diverse relative to the first signal and including the first and second pilots. Claim 12 is directed to a base station that includes (a) a first signal generator that generates a first signal based on a first data stream and a second data stream, the first signal including a first pilot and an inverted second version of the second pilot and (b) a second signal generator that generates a second signal based on the first data stream and the second data stream such that the second signal is diverse relative to the first signal and the second signal includes the first and second pilots. Similarly, claim 23 is directed to a computer program that includes (a) a first routine to generate a first signal based on a first data stream having a first pilot and a second data stream having a second pilot where the first signal includes a first pilot and inverted version of the second pilot and (b) a second routine to generate a second signal based on the first data stream having the first pilot and the second data stream having the second pilot such that the second signal is diverse relative to the first signal and including the first and second pilots. In view of the foregoing, independent claims 1, 12, and 23 each include a first and second signals that are generated from the same components where one of the signals uses an inverse of a component or subtracts the components so that the two generated signal are diverse from one another.

In view of the foregoing, the claims are directed to converting the two existing propagation paths in transmit diversity systems that may be highly correlated into two new composite equivalent propagation paths which are not correlated. Thus, the communication systems can realize a fuller benefit of transmit diversity. Applicants achieve this result by transmitting the sum of two data streams or part of the data streams (the pilots) as one output and the difference of the two data streams or part of the data streams (the pilots) as another output for the two transmit diversity branches. This is shown in Figures 3 and 4 of the Application and the related text. In particular, the first antenna 210 transmits the signal from the summation of source #1 310/410 and source #2 320/420, and antenna 220 transmits the signal from the subtraction of source #1 310/410 and source #2 320/420. See also page 10, lines 11-13.

Applicants contend that the Office Action mischaracterized Wang. Wang discloses a method of producing two propagation channel estimations in a two antenna transmit diversity system. In particular, Wang discloses transmitting on the two antennas

two pilot symbols during two symbol periods. In other words, each antenna has two pilot symbols that are transmitted when each pilot symbol is sent at a different symbol period. This combination allows the two propagation channels to be derived by solving the received signal for the sum and difference of the propagation channels h1 and h2 for the period of the two symbols. While Wang discloses the sum and difference of the symbols, the sum and difference of the symbols is created in the receiver as a tool for deriving h1 and h2 for the period of the two symbols where the symbols are correlated. On the other hand, claims 1, 12 and 23 require the sum and difference from the first and second data streams are created for the whole first and second symbols. Moreover, these whole symbols are created in the transmitter in order to create uncorrelated channels at the receiver. In other words, the summation and subtraction disclosed by the Wang are for a period of the two correlated symbols while the claims create diversity using summation and subtraction for the whole symbols that are uncorrelated.

In view of the foregoing, Applicants respectfully submit that the cited combination of Kotzin and Wang does not disclose, teach or otherwise suggest transmit diversity claimed in claims 1, 12 and 23. Applicants therefore respectfully submit that independent claims 1, 12 and 23 are not obvious in view of the Kotzin and Wang.[1] As claims 2-3 and 6-11 depend on claim 1, claims 13-17 and 19-22 depend on claim 12, and claims 24-34 depend upon claim 23, Applicants respectfully submit that these dependent claims are not unpatentable in view of Kotzin and Wang for the same reasons. Applicants request that the rejection under Section 103(a) be withdrawn.

[1] Applicants note that claim 35 includes similar language to that found in claim 1, 12 and 23. In particular, claim 35 states that the method creates (a) a first output from the sum of first and second signals and (b) a second output from the subtraction of the first and second signals.

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As the Applicants have overcome all substantive rejections and objections given by the Examiner and have complied with all requests properly presented by the Examiner, the Applicants contend that this Amendment, with the above discussion, overcomes the Examiner's objections to and rejections of the pending claims. Therefore, the Applicants respectfully solicit allowance of the application. If the Examiner is of the opinion that any issues regarding the status of the claims remain after this response, the Examiner is invited to contact the undersigned representative to expedite resolution of the matter.

Please charge any fees associated herewith, including extension of time fees, to **50-2117**.

Respectfully submitted,
Shperling, Itzak, et al.

By: Simon B. Anolick

Simon B. Anolick
Attorney for Applicant
Registration No.: 37,585
Telephone: 847-576-4234
Fax: 847-576-3750

SEND CORRESPONDENCE TO:

Motorola, Inc.
Law Department

Customer Number: **22917**